


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604

DATE: **MAR 07 2012**

SUBJECT: Clean Air Act Inspection of Gunit Corporation, in Rockford, Illinois

FROM: Dakota Prentice, Environmental Engineer  
Air Enforcement and Compliance Assurance Section (IL/IN)

THRU: Nathan Frank, Chief   
Air Enforcement and Compliance Assurance Section (IL/IN)

TO: File

**Date of Inspection** February 14, 2012

**Attendees** Greg Gehrig, U.S. EPA  
Dakota Prentice, U.S. EPA  
Jay W. Arterberry, Gunit Corporation – Foundry Manager  
J. Bruce Henderson, Accuride Wheels – Director/EHS Operations  
Carl D. Welton, Gunit Corporation – Environmental, Health and Safety Manager

**Purpose of Inspection**

The purpose of the inspection was to assess compliance of Gunit Corporation (Gunit) with the Clean Air Act.

**Company Description**

Physical Location/Mailing Address: Gunit Corporation  
302 Peoples Avenue  
Rockford, Illinois 61104

**Opening Conference**

Greg Gehrig and Dakota Prentice (EPA inspectors), arrived and entered the Gunit facility at 302 Peoples Avenue in Rockford (the Facility) at approximately 9:00 am. Upon entering the Facility the EPA inspectors notified the receptionist of the purpose of the visit and requested to meet with the plant manager or environmental compliance manager. The EPA Inspectors were met in the reception area by Carl Welton, the Environmental, Health and Safety Manager of the Facility. The EPA inspectors presented

their credentials to Mr. Welton and stated the purpose of the visit, which was to assess compliance of the Facility with the Clean Air Act. Mr. Welton took the EPA Inspectors to his office for the opening conference.

The opening conference was attended by Mr. Welton and Bruce Henderson of Accuride Wheels (Accuride). The EPA Inspectors were informed that Gunitite was owned by Accuride. During the opening conference the EPA Inspectors stated it was an unannounced inspection, that questions would be asked about the Facility's processes, and that a tour of the Facility would be incorporated into the inspection. A review of the Facility's processes was requested.

Mr. Welton provided a brief overview of facility operations. This overview is discussed below under the subheading "Facility Operations." Mr. Welton stated the Facility is a grey iron foundry producing brake drums for Class 8 trucks (e.g., school buses, dump trucks, etc.). The Facility currently employs approximately 470 people. Foundry work consisting of operation of a cupola furnace, including charging, tapping, and casting operations is performed five days per week at 24 hours per day. Machining is performed six days per week at 24 hours per day.

#### **Facility Operations:**

Foundry operations begin with the delivery of scrap metal to the Facility. All scrap is supplied by Behr Materials. Behr Materials provides Gunitite with a certification that the scrap material is free of mercury switches and radioactive material. Ex. 4 (CBI)

The Facility has two cupola furnaces. These furnaces are not run simultaneously and utilize coke and natural gas with oxygen induction as a fuel source. A cupola furnace is operated for approximately 2.5 to three weeks and then shutdown for the reapplication of a spray liner over the refractory brick. The furnaces function as a continuous process while in operation.

The coke used in the cupola furnaces is supplied by Walter Energy and comes from a facility in Alabama. Mr. Welton provided a Certificate of Analysis of the coke used at the Facility.

When the Facility switches furnaces after approximately 2.5 to three weeks of operation at one unit, the cold furnace is first filled with paper (documentation requiring destruction), wood, and coke and the natural gas burners are turned on. Ex. 4 (CBI)

The temperature within the furnace is maintained at approximately 3,400 to 3,500 °F. The molten metal leaving the furnace and traveling to a holding furnace is approximately 2,500 °F.

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Emissions generated at a cupola furnace are directed first through a series of four static burners to reduce carbon monoxide levels. After the static burners, the emissions travel to a venturi scrubber to remove particulate matter before being released to the atmosphere. The water leaving the venturi scrubber is treated in a closed loop system to remove the collected particulates and then returned to the venturi unit. The sludge generated from treatment of the venturi water is later mixed with foundry sand and used as landfill cover.

The Facility maintains a minimum temperature of 1,650°F at the static burners and maintains a differential pressure of 36 to 38 inches of water at the venturi scrubber. The flow of water at the scrubber is not monitored; however, Mr. Welton stated that the screen (through which the water travels) at the unit is typically cleaned daily.

The molten metal leaving the cupola furnace travels continuously to one of two 45 ton electric holding furnaces. The holding furnaces have capture hoods located above the units to direct emissions to a baghouse.

The holding furnaces are tilted to pour the molten metal into ladels. The ladels are taken to a pouring line where the metal is poured into sand molds to create the brake drum. The pouring line has a capture system to direct emissions to a baghouse.

The Facility uses sand molds and cores to create the shape of the brake drum. The molds create the exterior shape of the casting and the cores create the interior voids of the casting. The Facility makes the sand molds onsite, but cores are produced by a third party. Sand utilized for molds can be reused approximately two to three times before being removed from the process. The sand taken out of use is treated to stabilize lead and then sent to a landfill with the material generated by the venturi scrubber.

The Facility also has the ability to produce a ductile grey iron by adding magnesium to the molten metal. This is referred to as a magnesium inoculation process and is utilized infrequently. The ductile gray iron is used for the production of six spoke wheels.

Jay Arterberry joined the opening conference to provide additional details regarding the production process. Mr. Arterberry stated that the Facility produces Class 30 Gray Iron, which consists of iron with specific amounts of carbon, silicon, manganese, and chromium.

[REDACTED] The Facility monitors the composition of the iron during production (a sample is collected every five ladels) and adds additional metal as needed to meet the required specification at either the holding furnace or ladle as needed.

Following pouring, the cast metal in the mold then moves to a knockout line to shake the mold and core sand from the castings. The castings are then taken to what is described as the “clean room” where a shot blast system is used on the brake drum prior to painting. Emissions generated at the knockout line and clean room are directed to a baghouse.

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At the paint booth water soluble paint is applied to the exterior of the brake drum. The paint booths utilize a filter system to capture particulates generated during painting.

The painted brake drum then travels to the machining department. The machining department reduces the thickness of the brake drum from the interior to meet the final specifications. The metal fines generated at this stage of production are sent to a briquetting unit prior to being fed back into the furnace.

The Facility utilizes five baghouses for the control of various emission sources including holding furnace emissions, the sand system, sand shakedown, and shot blasting.

Mr. Welton stated that the existing Title V permit for the Facility includes a baghouse no longer in operation, BH-6, and does not include a baghouse added since the permit was issued, identified as the Monroe Dust Collector or BH-11. Mr. Welton stated that these modifications have been included in the Facility's permit renewal application.

#### **Facility Tour**

Following the opening conference, EPA Inspectors requested a tour of the Facility. Starting at approximately 10:30 am, Mr. Henderson and Mr. Welton proceeded to walk the EPA Inspectors through the Facility highlighting major process units in the production of brake drums.

The tour started at charging of the furnace and followed production through the holding furnaces, pouring line, to final machining of the brake drums. EPA Inspectors were also shown all five operating baghouses and the venturi scrubber.

At various points in the metal melting and pouring process EPA Inspectors observed uncaptured emissions. Significant uncaptured emissions were observed at the areas adjacent to the electric holding furnaces and the pouring line.

**Ex. 4 (CBI)**



# Ex. 4 (CBI)

## **Closing Conference**

Following the tour Mr. Henderson, Mr. Welton, and the EPA Inspectors proceeded back to Mr. Welton's office. At this time the EPA Inspectors asked if any modifications to the Facility were planned or proposed. Mr. Welton stated that one new baghouse was proposed to replace the current baghouse BH-10 in 2012. For 2013, Gunité was considering either modifications to the venturi scrubber system or switching to a baghouse to capture particulate emissions from the cupola furnaces. Mr. Welton stated that the Facility can not operate at full capacity as the venturi system would not be able to meet the required particulate matter emissions limits.

Mr. Welton requested that production rate and charge recipe information be considered confidential business information, as well as all the records taken by EPA Inspectors.

EPA Inspectors thanked the Mr. Henderson and Mr. Welton for their time and left the Facility at approximately 11:30 am.

## **Records Obtained:**

1. Coke Certificate of Analysis: Walter Energy – Walter Coke
2. May 4, 2011 Venturi Scrubber Stack Test Results Summary

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3. 2011 Production Summary
4. Analytical Report, dated August 21, 2009
5. 27 Photographs
6. 2 Videos

Standard bcc's:        Official file copy w/attachment(s)

Other bcc's:

Creation Date:	March 6, 2012
Filename:	F:\2012\Gunitite Corp\Inspection Report\Gunitite - Inspection Report.docx
Legend:	ARD:AECAB:AECAS(IL/IN): D. Prentice